CLAIMS

What is claimed is:

1. A route guidance system comprising a mobile terminal provided with the following components (A1) through (A7) and a server provided with the following components (B1) through (B6):

(A1) searching condition input means composed of a searching condition entry image display means that displays an image used to enter a route searching condition consisting of a starting location and a destination location on an information display screen, and a searching condition storing means for storing the route searching condition established as a result of the input made to the route searching condition entry image;

(A2) searching condition transmitting means that transmits the route searching condition data to the server;

(A3) searching result receiving means that receives route data representing a route from the starting location to the destination location from the server, and which is produced by the server according to the route searching condition data, and;

(A4) map request transmitting means that transmits map data transmission requests for the transmission of map data to the server;

(A5) map data receiving means that receives map data transmitted from the server;

(A6) route image producing means that produces a route image based on route data and the possible range of display on the information display; and

(A7) guide map image producing means that produces a route guidance map image by combining the route image and the map image obtained based on the map data, and

(B1) searching condition receiving means that receives the data of route searching conditions transmitted from the mobile terminal;

(B2) route producing means that determines the route from the starting location to the destination location according to the route searching condition received, and produces the route data consisting of starting location data which indicates the position of the starting location, destination location data which indicates the position of the destination location, and position data pertaining to a guide point which is set in the course of the route, and notifies the user of guide information;

(B3) route data transmitting means that transmits the route data to the mobile terminal;

(B4) map data storing means that stores map data;

(B5) map request receiving means that receives the map data transmission request transmitted from the mobile terminal; and

(B6) map information transmitting means that transmits the map data corresponding to the map data transmission request to the mobile terminal.

2. The route guidance system according to claim 1, wherein the mobile terminal is provided with the following components (A8) through (A11):

(A8) current location measuring means that measures the current location of the mobile terminal;

(A9) guide execution point setting means that establishes the guide point situated along the route nearest the current location and the destination location, or the destination location as a guide execution point;

(A10) distance calculating means that calculates the distance between the current location and the guide execution point based on data pertinent to the position of the current location and the position of the guide

execution point; and

(A11) guide information notifying means that notifies the user of the guide information based on the distance between the current location and the guide execution point.

3. The route guidance system according to claim 2, wherein the mobile terminal is provided with the following components (A12) through (A14):

(A12) guide voice storing means that stores a guide voice for notifying the user that the distance between the current location and the guide execution point has reached a predetermined distance;

(A13) distance notification discriminating means for determining whether the distance between the current location and the guide execution point has reached a predetermined distance; and

(A14) the guide information notifying means comprising guide voice reproducing means that reproduces the guide voice as guide information if the predetermined distance has been reached.

4. The route guidance system according to any one of claims 1 to 3, wherein the server is provided with the following components B(8) through B(10):

(B8) a route with a starting location on one end and a destination location on the other end, and is formed by connecting a plurality of lines and curves in succession;

(B9) a guide point candidate setting means that sets guide point candidates comprising the points of connection between the lines and curves forming the route; and

(B10) a guide point setting means that sets the guide point from among the guide point candidates in accordance with a predetermined condition.

5. The route guidance system according to claim 4, wherein the server is provided with the following components B(11) through B(15):

(B11) a map data storing means that stores road data that is formed by connecting a plurality of lines and curves in succession along the center of a road on a map, and comprises data pertinent to the location of the point of connection between the lines and curves;

(B12) a route producing means that produces the route along the road;

(B13) a guide point candidate setting means that sets the connection point arranged on the route as the guide point candidate;

(B14) a route turn angle determining means that determines for a specific guide point candidate whether the route turn angle formed along the route between the starting location guide point candidate situated on the starting location side of the specific guide point candidate and the specific guide point candidate, and whether the route turn angle formed along the route between the destination location guide point candidate situated on the destination location side of the specific guide point candidate and the specific guide point candidate, is equal to or less than a predetermined angle; and

(B15) a guide point setting means that sets the specific guide point candidate as the guide point if the route turn angle is equal to or less than the predetermined angle.

6. A mobile terminal provided with the following components (A1) through (11):

(A1) searching condition input means composed of a searching condition entry image display means that displays an image used to enter a route searching condition consisting of a starting location and a destination location on an information display screen, and a searching condition storing means for storing the route searching condition established as a result of the

input made to the route searching condition entry image;

(A2) searching condition transmitting means that transmits the route searching condition data to the server;

(A3) searching result receiving means that receives route data representing a route from the starting location to the destination location from the server, and which is produced by the server according to the route searching condition data, and;

(A4) map request transmitting means that transmits map data transmission requests for the transmission of map data to the server;

(A5) map data receiving means that receives map data transmitted from the server;

(A6) route image producing means that produces a route image based on route data and the possible range of display on the information display; and

(A7) guide map image producing means that produces a route guidance map image by combining the route image and the map image obtained based on the map data, and

(A8) current location measuring means that measures the current location of the mobile terminal;

(A9) guide execution point setting means that establishes the guide point situated along the route nearest the current location and the destination location, or the destination location as a guide execution point;

(A10) distance calculating means that calculates the distance between the current location and the guide execution point based on data pertinent to the position of the current location and the position of the guide execution point; and

(A11) guide information notifying means that notifies the user of the guide information based on the distance between the current location and

the guide execution point.

7. The mobile terminal according to claim 6, wherein the mobile terminal is provided with the following components A(12) through A(14):

(A12) guide voice storing means that stores a guide voice for notifying the user that the distance between the current location and the guide execution point has reached a predetermined distance;

(A13) distance notification discriminating means for determining whether the distance between the current location and the guide execution point has reached a predetermined distance; and

(A14) the guide information notifying means comprising guide voice reproducing means that reproduces the guide voice as guide information if the predetermined distance has been reached.

8. A server provided with the following components:

(B1') searching condition receiving means that receives the data of route searching conditions including a starting location and a destination location transmitted from a mobile terminal;

(B2) route producing means that determines the route from the starting location to the destination location according to the route searching condition received, and produces the route data consisting of starting location data which indicates the position of the starting location, destination location data which indicates the position of the destination location, and position data pertaining to a guide point which is set in the course of the route, and notifies the user of guide information;

(B3) route data transmitting means that transmits the route data to the mobile terminal;

(B4) map data storing means that stores map data;

(B5') map request receiving means that receives the map data transmission request transmitted from the mobile terminal, and requests a

transmission of the map data to the mobile terminal; and

(B6) map information transmitting means that transmits the map data corresponding to the map data transmission request to the mobile terminal.

9. The server according to claim 8, provided also with the following components B(8) through B(10):

(B8) a route with a starting location on one end and a destination location on the other end, and is formed by connecting a plurality of lines and curves in succession;

(B9) a guide point candidate setting means that sets guide point candidates comprising the points of connection between the lines and curves forming the route; and

(B10) a guide point setting means that sets the guide point from among the guide point candidates in accordance with a predetermined condition.

10. The server according to claim 9, provided also with the following components B(11) through B(15):

(B11) the map data storing means that stores road data that is formed by connecting a plurality of lines and curves in succession along the center of a road on a map, and comprises data pertinent to the location of the points of connection between the lines and curves;

(B12) the route producing means that produces the route along the road;

(B13) the guide point candidate setting means that sets the connection point arranged on the route as the guide point candidate;

(B14) a route turn angle determining means that determines for a specific guide point candidate whether the route turn angle formed along the route between the starting location guide point candidate situated on the

starting location side of the specific guide point candidate and the specific guide point candidate, and whether the route turn angle formed along the route between the destination location guide point candidate situated on the destination location side of the specific guide point candidate and the specific guide point candidate, is equal to or less than a predetermined angle; and

(B15) a guide point setting means that sets the specific guide point candidate as the guide point if the route turn angle is equal to or less than the predetermined angle.

11. A program for causing a computer constituting a mobile terminal designed to execute functions and provided with the following components:

searching condition input means composed of a searching condition entry image display means that displays an image representing a route searching condition consisting of a starting location and a destination location on an information display screen, and a searching condition storing means for storing the route searching condition established as a result of the input made to the route searching condition entry image;

searching condition transmitting means that transmits the route searching condition data to the server;

searching result receiving means that receives route data representing a route from the starting location to the destination location from the server, and which is produced by the server according to the route searching condition data, and;

map request transmitting means that transmits map data transmission requests for the transmission of map data to the server;

map data receiving means that receives map data transmitted from the server;

route image producing means that produces a route image based on

route data and the possible range of display on the information display screen; and

guide map image producing means that produces a route guidance map image by combining the route image and the map image obtained based on the map data, and

current location measuring means that measures the current location of the mobile terminal;

guide execution point setting means that establishes the guide point situated along the route nearest the current location and the destination location, or the destination location as a guide execution point;

distance calculating means that calculates the distance between the current location and the guide execution point based on data pertinent to the position of the current location and the position of the guide execution point; and

guide information notifying means that notifies the user of the guide information based on the distance between the current location and the guide execution point.

12. The program for causing a computer constituting a mobile terminal designed to execute functions according to claim 11, and provided with the following components:

guide voice storing means that stores a guide voice for notifying the user that the distance between the current location and the guide execution point has reached a predetermined distance;

distance notification discriminating means for determining whether the distance between the current location and the guide execution point has reached the predetermined distance for notification; and

guide information notifying means comprising guide voice reproducing means that reproduces the guide voice as guide information if

the predetermined distance has been reached.

13. A program for causing a computer constituting a server designed to execute functions and provided with the following components:

searching condition receiving means that receives the data of route searching conditions including a starting location and a destination location transmitted from a mobile terminal;

route producing means that determines a route from the starting location to the destination location according to the route searching condition received, and produces the route data consisting of starting location data which indicates the position of the starting location, destination location data which indicates the position of the destination location, and position data pertaining to a guide point which is set in the course of the route, and notifies the user of guide information;

route data transmitting means that transmits the route data to the mobile terminal;

map data storing means that stores map data;

map request receiving means that receives the map data transmission request transmitted from the mobile terminal, and requests a transmission of the map data to the mobile terminal; and

map information transmitting means that transmits map data corresponding to the map data transmission request to the mobile terminal.

14. The program for causing a computer constituting a server designed to execute functions according to claim 13, and provided with the following components:

a route with a starting location on one end and a destination location on the other end, and is formed by connecting a plurality of lines and curves in succession;

guide point candidate setting means that sets guide point candidates

comprising the points of connection between the lines and the curves forming the route; and

guide point setting means that sets the guide point from among the guide point candidates in accordance with a predetermined condition.

15. The program for causing a computer constituting a server to execute functions according to claim 14, comprising:

the map data storing means that stores road data that is formed by connecting a plurality of lines and curves in succession along the center of a road on a map, and comprises data pertinent to the location of the points of connection between the lines and curves;

the route producing means that produces the route along the road;

the guide point candidate setting means that sets the connection point arranged on the route to the guide candidate point;

the route turn angle determining means that determines for a specific guide point candidate whether the route turn angle formed along the route between the starting location guide point candidate situated on the starting location side of the specific guide point candidate and the specific guide point candidate, and whether the route turn angle formed along the route between the destination location guide point candidate situated on the destination location side of the specific guide point candidate and the specific guide point candidate, is equal to or less than a predetermined angle; and

the guide point setting means that sets the specific guide point candidate as the guide point if the route turn angle is equal to or less than the predetermined angle.

16. A computer-readable recording medium that records the program according to any one of claims 11 to 15.